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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,467	01/06/2004	Yun-gi Kim	1349.1341	2354
21171	7590	12/06/2005	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			MRUK, GEOFFREY S	
		ART UNIT	PAPER NUMBER	
			2853	

DATE MAILED: 12/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

APC

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/751,467	KIM ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Geoffrey Mruk	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### **Status**

- 1) Responsive to communication(s) filed on 15 November 2005.
- 2a) This action is **FINAL**.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### **Disposition of Claims**

- 4) Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 5-24 and 26-29 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-4, 25 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### **Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### **Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### **Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	6) <input type="checkbox"/> Other: _____.

## **DETAILED ACTION**

### ***Election/Restrictions***

Claims 5-24 and 26-29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 15 November 2005.

### ***Claim Objections***

Claims 1 and 3 are objected to because of the following informalities:

1. Claim 1 states "a second trench formed at a second surface of the substrate in a second pattern, having one of an area equal to and an area smaller than that of the first trench in the range of the first pattern of the first trench". The area of the second trench cannot be equal to and smaller than the area of the first trench simultaneously. In light of the specification, the examiner will examine "the second trench formed at a second surface of the substrate in a second pattern, having one of an area smaller than that of the first trench in the range of the first pattern of the first trench".
2. Claim 3 lacks antecedent basis for the term "separating distance".  
Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Baughman et al. (US 5,387,314).

With respect to claim 1, Baughman discloses a bubble-ink jet print head (Column 1, lines 22-27) comprising:

- a substrate (Fig. 1, element 12) having ink chambers (Fig. 1, element 14) to store ink and resistance heat emitting bodies (Fig. 4D, element 16) to heat ink disposed there over; and
- an ink supply passage (Fig. 4C, element 18) which penetrates the substrate and which is connected with the ink chambers, the ink supply passage including:
- a first trench (Fig. 4D, element 18a) formed at a first surface of the substrate in a first pattern having a separating distance from at least one of inlets of the ink chambers and connecting portions between the adjacent ink chambers, the first surface of the substrate having the ink chambers disposed there over, and
- a second trench (Fig. 4C, element 18) formed at a second surface of the substrate in a second pattern, having one of an area equal to and an area smaller than that of the first trench in the range of the first pattern of the first trench, and in communication with the first trench (Column 7, lines 22-45).

With respect to claim 3, Baughman discloses the separating distance (Fig. 2b, element  $S_L$ ) is from 1 $\mu$ m to 5 $\mu$ m (Column 7, lines 46-57).

With respect to claim 4, Baughman discloses the second trench (Fig. 3, element 18) is formed to have a width wider than that of the first trench (Fig. 3, element 18a).

With respect to claim 25, Baughman discloses an ink-jet print head (Column 1, lines 22-27), comprising:

- a substrate (Fig. 1, element 12);
- at least one heater (Fig. 4D, element 16) formed on a top surface of the substrate which heats ink disposed;
- an ink chamber (Fig. 1, element 14) disposed at least partially over the at least one heater; and
- an ink supply (Fig. 4C, element 18) opening extending through the substrate, the ink passage in fluidic communication with the ink supply chamber and the ink chamber, the ink supply opening including a first trench (Fig. 4D, element 18a) formed at an ink chamber side of the substrate in a first pattern having a separated distance (Fig. 2b, element  $S_L$ ) from at least one of inlets of the ink chambers and connecting portions between the adjacent ink chambers, and
- a second trench (Fig. 4C, element 18) formed at a second surface of the substrate in a second pattern having one of an area equal to and an area smaller than that of the first trench in the range of the first pattern of the first trench, to communicate with the first trench (Column 7, lines 22-45).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baughman et al. (US 5,387,314) in view of Trueba et al. (US 4,882,595).

With respect to claim 2, Baughman discloses the first trench (Fig. 4D, element 18a).

However, Baughman fails to disclose the first trench has a depth from 5 $\mu$ m to 20 $\mu$ m.

Trueba discloses a hydraulically tuned channel architecture where "The height of the channel 10 ranges from about 15 to 30 $\mu$ m" (Column 5, lines 37-43).

At the time of the invention, it would have been obvious for one of ordinary skill in the art to use the architecture disclosed by Trueba in the ink-jet printhead of Baughman. The motivation for doing so would have been to provide a printhead where "The novel printhead structure of the invention accomplishes both (1) isolation of any given nozzle from its neighbors, i.e., cross-talk reduction, and (2) reduced oscillation of the meniscus caused by refill dynamics in any individual nozzle. This prevents meniscus displacements from interfering with the ejection of subsequently fired droplets, while limiting the severity of any side effects incurred in the implementation of the desired

structure. The new printhead structure has the additional advantage of being easy to implement and easy to "tune" for maximum effectiveness" (Column 4, lines 15-25).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is 571 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM  
11/29/2005

GM

 12/11/05  
**MANISH S. SHAH**  
**PRIMARY EXAMINER**